

TEMPORARY SURVEILLANCE SYSTEM

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5 2002; which was a continuation of U.S. Patent Application No. 09/958,706, filed
February 7, 2001, now U.S. Patent 6,585,428; which is a National filing of International
Application No. PCT/US01/04533, filed February 12, 2001; which claimed priority on
U.S. Application No. 09/503,028, filed February 10, 2000, now U.S. Patent 6,375,370;
and which was a continuation-in-part of U.S. Application No. 09/502,028, filed February
10 10, 2000, now U.S. Patent 6,375,370.

Field of the Invention

The present invention relates to surveillance systems and more specifically relates
to a temporary surveillance and security system.

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Background of the Invention

Surveillance systems for monitoring remote installations are well known, and
typically include on-site surveillance equipment, such as video cameras, microphones,
infrared sensors and the like, positioned at various locations, to capture electronic data
and information, as well as visual images of the site. These conventional systems often
20 utilize a central monitor station for receiving and processing the electronic data from the
multiple remote installations. Such surveillance systems require a structure on which the
camera or other device may be securely mounted at a desirable elevation. The structure
may be a wall of a facility, for example.

25 On a building construction site, for example a site where an apartment building is
under construction, such conventional surveillance systems are less than adequate, as the
apartment building itself may be the target of theft or vandalism. The nature of the
building under construction lends itself to being climbed by persons intent on vandalism,
and the camera used for surveillance can be easily tampered with or destroyed, leaving
30 the construction site virtually unguarded. Theft and arson are not uncommon at such

sites, and therefor security guards may be hired to watch the site during off-hours. As can be appreciated, such a solution to vandalism problems is costly and may not be as reliable as an unmanned, mechanical surveillance system.

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Summary of the Invention

The present invention provides a surveillance system which is especially advantageous for temporary use where a conventional surveillance system would be undesirable, such as at a construction site, outdoor concert event, or political rally. The system is transportable to the site in separate portions and then assembled on the site.

10 Once assembled, the system is effectively indestructible, tamper-proof and highly reliable to use. Advantageously, once the system is no longer needed, it can be disassembled and used again in another location.

Accordingly, a temporary surveillance system is provided by the present invention which overcomes the inadequacies of conventional systems. The system is easily
15 assembled at an area to be surveyed. The system is highly versatile for accommodating a number of different applications for example, for daytime and/or evening monitoring of construction sites, outdoor concert events, political rallies, or any other location or event which could benefit from ongoing surveillance.

Importantly, the system is designed to be easily assembled at a site, and effectively
20 tamper-proof once assembled.

The present surveillance system in accordance with the present invention generally comprises a surveillance assembly, including a platform adapted to support surveillance equipment, for example cameras, and a base, including a substantially hollow enclosure adapted to accommodate a power supply and electronics equipment for
25 controlling the surveillance equipment.

The system further includes a support pole, including a lower portion detachably mounted to the base, and an upper portion detachably mounted to the surveillance assembly platform. Applicable wires and cables for connecting the electronics equipment and the surveillance equipment are provided through conduit aligned along or within the
30 support pole. For example, the support pole may be substantially hollow and when

disposed through the base may provide an inlet for running wires and cables from the base enclosure through the pole and into the surveillance assembly. The support pole preferably has an inner diameter of a suitable size to accommodate wires and cables and conduit, which may include for example PVC conduit isolating any communication
5 cables from electrical wires/cables. The support pole may be comprised of a unitary structure of up to about 25 feet or more, or may be comprises of a plurality of separate telescoping segments.

The base can comprise a heavy concrete structure weighing, for example, at least about 2500 pounds, sufficient to prevent the base from being manually displaced. The
10 concrete structure may include a steel frame and steel recessed doors resistant to prying or breaking.

The electronics equipment and surveillance equipment may be connected to a power source by hardwiring or quick connect plugs and receptacles. The power source may be an existing 120V or 220V commercial power source. Preferably, the surveillance
15 assembly further includes a power distribution box, mounted in a water tight enclosure to the upper portion of the support pole, the power distribution box being adapted to receive and distribute electrical power from the power source to the surveillance equipment.

In a preferred embodiment, a circuit box including a receptacle for connecting to an existing power supply is provided and is housed within the enclosure. The circuit box
20 preferably includes a plurality of receptacles for accommodating equipment plugs. A power supply may be included within the base enclosure for providing electrical power to the electronic equipment. If power supply is provided, it is preferably enclosed within the concrete base enclosure. The power supply may be electrically connected to an existing power source through wires disposed through the center of the base. Batteries,
25 generators, solar collectors or other suitable means for providing alternative sources of power may also be provided. These alternative power sources may be enclosed within the base enclosure or may be attached to the platform.

The system may further comprise vent means for facilitating passage of air through the system in order to cool the electronic equipment enclosed in the base. For
30 example, the vent means may include an air inlet within the upper portion of the support

pole and a fan within the base enclosure, for drawing ambient, cool air through the air inlet through the pole and into the enclosure and for forcing relatively warmer air out of the base enclosure.

The surveillance equipment may comprise many different pieces of equipment, depending on the application desired. The surveillance equipment may comprise a plurality of cameras, for example video cameras, time lapse, digital, still photography cameras, and/or infrared sensors. The platform may be sized and adapted to support any number of cameras or sensors, between one and up to about 250 pieces of equipment. The surveillance equipment may comprise a multiplexor, which may be a four camera multiplexor, an 8 camera multiplexor or a 16 camera multiplexor. The surveillance equipment may be permanently secured to the platform or may be removable. Other surveillance equipment may be alternatively or additionally be provided, for example, pan and tilt devices, satellite transmission devices, and cell phone applications.

In an alternate embodiment, of the present invention, the base can comprise a heavy, solid concrete block, a heavy metal plate structure, a metal or plastic reinforced tank capable of holding water and/or sand, or a reinforced frame with a bladder capable of holding water and/or sand. Such bases have means for permanently or detachably securing the pole. A secured metal container or box for holding, protecting and securing the power supply and electronic equipment for the surveillance equipment can be permanently or detachably secured to the pole and/or the base.

Brief Description of the Drawings

The features and advantages of the present invention will be more clearly understood and appreciated with reference to the following detailed description when considered in conjunction with the accompanying drawings of which:

Figure 1 shows a diagram of an embodiment of a surveillance system in accordance with the present invention, including a heavy, immovable concrete base adapted to contain electronics equipment and a power supply, a support pole, a platform supporting a plurality of surveillance cameras and other surveillance equipment, and cables and wires running at least partially through the support pole to provide electrical

and communications connection between the electronics equipment and power supply and the surveillance equipment;

Figure 2 shows a perspective view of the base shown in Figure 1 comprising a substantially hollow enclosure for containing the electronics equipment, and a mounting
5 bracket for enabling the support pole to be detachably mounted to the base;

Figures 3 and 4 show a side view and a front view, respectively, of the base enclosure shown in Figure 2;

Figure 5 shows a perspective front view of the base enclosure including a tamper-proof, steel door for enabling access to the equipment in the enclosure;

10 Figure 6 is a perspective view of an alternative embodiment of the surveillance system;

Figure 7 is a cross-sectional view taken along lines 7-7 of Figure 6;

Figure 8 is a perspective view of another embodiment of the surveillance system of the present invention;

15 Figure 9 is a perspective view of still another embodiment of the surveillance system of the present invention;

Figure 10 is a cross-sectional view taken along line 10-10 of Figure 9; and

Figure 11 is a perspective view of a further embodiment of the surveillance system of the present invention.

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Detailed Description of the Preferred Embodiments

Turning now to Figure 1, a surveillance system in accordance with the present invention is shown generally at 10. The system generally comprises a surveillance assembly 12, including a platform 14 adapted to support surveillance equipment 16 for
25 providing observations of an area 18 in a vicinity of the surveillance system 10.

The surveillance equipment 16 may include any number and type of device 16 suitable for providing observations of objects. For the sake of simplicity, the surveillance devices 16 shown in Figure 1 include a plurality of video cameras 20, though it is to be appreciated that the devices may alternatively or additionally include, for example, time
30 lapse, digital, still photography cameras, and/or infrared sensors. The platform 14 may

be sized and adapted to support any number of such cameras or sensors, for example between one and up to about 250 pieces of equipment. Furthermore, the surveillance equipment 16 may comprise a multiplexor, which may be a four camera multiplexor, an 8 camera multiplexor or a 16 camera multiplexor, as are known in the art. In addition, it is
5 contemplated that the surveillance assembly 12 may include equipment such as lights, satellite transmission devices, and equipment enabling cell phone applications.

The cameras 20 are shown as secured to the platform 14 by pivotal connectors 22 and the viewing direction and/or angle of the cameras 20 may be controlled by pan and tilt devices (not shown). The platform 14 itself may be a substantially planar element
10 made of steel or other suitable material or materials of construction.

The system 10 further comprises a base 26, including a substantially hollow enclosure 28 sized and adapted to contain equipment, for example electronics equipment 32 for controlling the surveillance equipment 16, for example a video cassette recorder unit 33, and a multiplexor server unit 34. The electronics equipment 32 may be housed
15 within a sub-enclosure 36 made of, for example, plastic, metal, fiberglass or other suitable materials. This sub-enclosure 36 may be equipped with a cooling fan 38, blower or other apparatus to maintain a suitable temperature for effective operation of the equipment 32.

The base 26 can be made of concrete and has a weight sufficient to prevent the
20 base 26 from being displaced by hand. The base 26 may have outer dimensions of, for example, 4' X 4' X 3', and inner enclosure dimensions of 1' X 2' X 4'. In addition, the base may have a weight of between about 1000 pounds and about 5000 pounds, conveniently between 2500 and 3000 pounds. The base 26 is constructed to be substantially impact resistant as well, for example with respect to collision by a motor
25 vehicle such as an automobile. Although not shown, the base 26 may include additional concrete block structures, bolted or otherwise secured to the sides of the base 26, to provide additional weight thereto as additional security against theft or tampering.

As shown, the system 10 further comprises a support pole 40 having an upper portion 42 mounted to the surveillance assembly 12 and a lower portion 44 detachably
30 mounted to the base 26, for example at a top center of the base 26. The pole 40 may be

about 25 feet high or more and may be comprised of a single pole structure or may be comprised of multiple telescoping portions (not shown). The height of the pole desired may depend on the elevation of which the surveillance equipment will be best suited for observing a desired range of the site. The pole 40 may be made of steel and preferably
5 includes a smooth surface finish for preventing climbing thereof.

In addition, means, such as suitable wiring and cables 48 are provided for connecting the surveillance equipment 16 on the platform 14 to the electronics equipment 32 contained in the base 26.

In a preferred embodiment, the support pole 40 is substantially hollow and is
10 adapted to accommodate the wires 46 and cables 48 used to functionally connect the electronics 32 with the surveillance equipment 16. Preferably, separate means are provided for connecting communications cables 48 with the surveillance assembly 12, for example the communications cables 48 may be run through PVC pipe 52 or other conduit suitable for effectively separating and shielding communications cables 48 from any
15 electrical field. Alternatively, cables, wires and conduit may be secured to an outer surface of the pole 36.

In one particularly advantageous embodiment of the invention, the base 28 also houses a ground fault breaker (GFI) box 56 electrically connected to receptacle means which may include for example an electrical box 58 having four or more standard plug
20 receptacles as shown for connecting to the electronics equipment 32. The GFI box is connected to an incoming power source of 110 volts or 120 volts or to a higher voltage source. As shown, for security reasons, the GFI box may be powered by a line 59 running through an aperture 60 in a bottom portion or slab 62 of the base enclosure 28. The aperture 60 may be more specifically a portion of PVC conduit having a diameter of
25 about 3 inches centered in the concrete base bottom 62. It should be appreciated that electrical power may alternatively be supplied to the GFI breaker box by other standard means, for example by power sources available through power poles at construction job sites, or by means such as batteries, generators, solar collectors or the like. Battery power can be converted through converters, inverters, or other suitable means.

Preferably, electrical power is provided to the surveillance equipment 16, through a separate power supply 66, for example an uninterruptible power supply (UPS) mounted within the base enclosure 28. The power supply 66 may comprise a single power supply unit for each surveillance device 16 or may be a larger power unit for supplying power to multiple devices 16. The power supply 66 may be mounted within the enclosure 28 by for example first mounting the power supply 66 to a (plywood) board by bolts which are bolted to the enclosure 28 by nuts poured in place while the concrete base is poured during construction of the base 26.

A distribution box 70, preferably mounted to the upper portion 42 of the pole 40, is provided for distributing electrical power from the power supply 66 to the various surveillance devices 16. Preferably, the distribution box 70 is water tight and weather resistant.

As shown in Figure 1, the distribution box 70 may alternatively be connected by line 74 to an existing power/utility pole 76 having a 110V or 120V power supply source. It is contemplated that communications devices, such as telephone devices, in the surveillance assembly may further be connected through communications cables provided by such utility poles.

It is to be appreciated that there are many alternative means for functionally and electrically connecting the surveillance equipment 16 with the electronics equipment 32 and many alternative means for electrically powering these devices, as will be known to those skilled in the art. All such alternative means are considered to be within the scope of the present invention.

Turning now to Figures 2, 3 and 4, an example of suitable means for attaching the pole 40 to the concrete base 26 is shown. Figure 2 shows the base 26 as including a steel mounting bracket 82 (for example, 24" X 24" X 3/16 " thick) having anchor bolts 84 projecting therefrom, and a sleeve 86 welded thereto for receiving the support pole 40. As shown in Figure 3, the base enclosure 28 includes an aperture 88 defined in a top wall 90 thereof aligned with the sleeve 86. The mounting bracket 82 is preferably secured into the concrete during the pouring stage. Turning now to Figure 4, the support pole 40 includes a complementary base plate 94(for example, 8" X 8" X 5/8" thick), with

apertures 96 for receiving the anchor bolts 84. The necessary cables/wires 46, 48 and PVC conduit (not shown in Fig. 3) have preferably been run through and are disposed within the pole 40 prior to connecting the pole 40 to the base 26. It is noted that alternatively, a support pole 40 may be provided without a base plate 94 and thus the lower portion 44 of the support pole 40 may actually be slidably engaged with the base enclosure 28 by being slipped into the top wall aperture 88 and allowed to contact the bottom slab 62 of the base 26, or may be prevented from contacting the bottom slab 62 by suitable weldings (not shown) on the pole limiting the distance the pole 40 will slip into the base enclosure 28.

10 Importantly, the system is constructed, so as to be tamper-resistant and indestructible for all reasonable purposes. As mentioned hereinabove, the base 26 itself is a substantially heavy structure. The base 26 also is preferably constructed so that the electronics 32 and other equipment in the enclosure 28 is effectively inaccessible by unauthorized persons. Referring briefly now to Figure 3, cover plates 102 are provided
15 on open ends 104 of the enclosure 28 for preventing unauthorized entry into the hollow enclosure. Each side portion of the base 26 may include a steel frame (not shown) cemented therein.

More specifically, for example, turning now to Figure 5, the base 26 is shown wherein at least one of the cover plates 102 comprises a lockable door 108 providing
20 means for enabling authorized access to the equipment in the base enclosure 28 while preventing access or tampering by unauthorized persons. The door 108 is "pry-proof" and may include a lock shield 112 enclosing a padlock (not shown). The base 26 may be poured from concrete/cement at the site it is to be used. The support pole and surveillance assembly, including applicable cables and wires within the pole, may be
25 transported from a place of manufacturing thereof, to the site and secured to the base as described hereinabove, by means of trailers and lifting cranes or other suitable machinery. Once assembled, the system is in effect, tamper-proof, and substantially indestructible.

Advantageously, as shown in Figure 5, the system 10 may further comprise vent
30 means, including for example, vent perforations 120 on the door 108 for facilitating

passage of air through the system 10 in order to cool the enclosure 28 and the electronic equipment 32 therein. Preferably, the vent means is adapted to draw ambient air through the upper portion of the support post 40 and into the base enclosure 28. For example, an aperture 124 in the platform 14, or alternatively in the pole 40) may be provided for
5 enabling inflow of cool air into the pole 40 (for example in direction represented by arrows 130) and into the base enclosure 28. As mentioned hereinabove, a mechanical fan or blower (not shown in Figure 5) may facilitate the cooling process.

Another embodiment of the present invention is illustrated in Figures 6 and 7. The base 26A is a solid structure, such as a concrete block having a vertical bore 160
10 extending down from the top for receiving hollow pole 40. An enclosure 140 for electronic equipment and power supply is secured to one side of the base. (The enclosure could also be secured to the top of the base.) The enclosure has side walls 142A, top and bottom walls 142B and back wall 144. Back wall 144 extends outwardly beyond the walls 142A and 142B forming a skirt. The skirt has bolt holes (not shown) to receive
15 anchor studs 152 extending out from the wall a the base. The skirt is secured to the studs with threaded nuts 154, which are welded to the studs, after tightening, to secure the enclosure.

The enclosure has a front frame 148 to receive a front plate 149 to secure the hollow enclosure 156 and the electronic equipment therein (not shown). The front plate
20 receives lock clasps 150 through apertures (not shown) in the front plate. The clasps have holes to receive shackles of locks 138. The hollow enclosure 156 communicates with the hollow pole 40 for wire and cable via hold 145 in the back plate, utility bore 161 in the base 26A, pole bore 160 and window 159 in the pole.

The pole 40 supporting the surveillance platform 14 is received within bore 160 of
25 the base 26A. A pair of retaining plates secured in the base are located on opposite sides of the bore. The plates have pin apertures 164. The pole has pin holes 170 which are can be aligned with apertures 164. The apertures and holes receive pin 166 which is secured on one end by head 167 and by lock 138A on the other end. The pin has lock shackle hole 168 to receive the lock.

Another embodiment of the present invention is shown in Figure 8. The surveillance system 10B has a heavy metal plate base 180. A sleeve 182 is secured to the top of the base. The sleeve receives and secures hollow pole 40 with a pin 184 which is received in holes (not shown) in the wall of the sleeve and the pole. The pin is secured in a manner similar to pin 166 in Figures 6 and 7. A secured enclosure 140A for the electronic equipment and power supply is secured to the top of the base. The enclosure has front plate 149A secured by clasps 150A and locks 138C in a manner similar to the front plate 149 of Figures 6 and 7 with a lock 138B. The enclosure is in wire and cable communication with the hollow pole 40 by armored conduit 186.

Referring to Figures 9 and 10, the base 190 comprises a housing having end walls 191, side walls 191A, a bottom wall 191B and a subdividing wall 191C within the housing running between side walls 191A and subdividing the housing into an open to compartment 192 and an enclosed compartment 194 having a top wall 191D. The compartment 194 houses the surveillance electronic equipment (not shown) and has a front plate 149B secured by clasps 150A and locks 138D in a manner similar to securing front plate 149A to enclosure 140A in Figure 8.

The base is fitted with sleeves 196A and 196B to receive and secure the pole 40. Hollow pole 40 has a window 206 to permit communication for cables and wire (not shown) from the equipment and power supplies (not shown) in compartment 194 with the interior of hollow pole 40.

The open top compartment can receive a bladder 198 which can be filled with water via fill spigot 200 to weigh the base down. The bladder is fitted with drain spigot 202 which extends through windows 204 of wall 191 for ease of drainage. The spigots can be lockable to prevent tampering. Alternatively, the open top compartment can be filled with one or more concrete or stone blocks, or with dirt and/or sand to weigh the base down.

Referring to Figure 11, the base 210 comprises a hollow housing having a continuous side wall 212, a bottom wall 212A and a top wall 212B. The base is designed to hold water or other fluid to weigh the base down. A sleeve 218 extends from the top of the base down to the bottom wall 212A. The top wall 212B has a fill spigot 200 and the

side wall 212 has drain spigot 202. The sleeve is adapted to receive and secure hollow pole 40. The pole is secured to the base chains 220A and 220B which are secured to the pole and sleeve and the chains are secured to each other by lock 1w38E. The top wall 212B or side wall 212 can be fitted with a secure enclosure, similar to the enclosure 140A and 140 of Figures 8 and 6, respectively, to hold surveillance electronic equipment and power supplies. The enclosure could communicate with the hollow pole by an armored conduit. Alternatively, a secure enclosure (not shown) can be attached to the pole 40 and communicate with the interior of the pole by holes through the back of the enclosure and the pole.

10 While this invention has been described with respect to various specific examples and embodiments, it is to be understood that the invention is not limited thereto, and that it can be variously practiced within the scope of the following claims.